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ABSTRACT

Intended to help pregnant women in Third World regions acquire the attitudes and skills necessary to help them maintain their health and that of their unborn children, the game uses role playing and simulation to stress the importance of prenatal care, teach the recognition and treatment of common pregnancy problems and danger signals, and encourage the discussion and analysis of health factors such as undernourishment, anemia, and fatigue. The game consists of a reproducible game board and drawing cards, a die or spinner, markers, beans, a content outline, and a guide for discussion, and it includes directions for players and educators, ideas for effective use of the game, and options for the presentation of the information. The game was developed for the rural women served by the government health center in Ciudad Vieja, Guatemala, where prenatal attendance at the clinic improved after women played the game. Educators can easily adapt the game to fit the needs of women in different areas of the Third World. (SB)

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ROAD-TO-BIRTH GAME

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RC014328

NOTE WRITTEN BY: JULIE BURNS and FRANK BIALOSIEWICZ

SUMMARY: This note describes a board game which simulates the prenatal period of women in Third World settings. Its purpose is to help pregnant women maintain their health and that of their unborn child.

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23. GAME OF CHILDHOOD DISEASES: describes a board game which addresses health problems of young children in the Third World.
24. ROAD-TO-BIRTH GAME: describes a board game which addresses health concerns of Third World women during the prenatal period.
25. DISCUSSION STARTERS: describes how dialogue and discussion can be facilitated in community groups by using simple audio-visual materials.

price: 1-15 $1.00 each 16-25 $1.50 each

TECHNICAL NOTES

This note is one of two Technical Notes based on the experience of staff working in the Women-to-Women Project in Ciudad Vieja, Guatemala in collaboration with local representatives of the Ministry of Public Health. Funding for this project was provided by the Third World Division of Ross Laboratories of Columbus, Ohio. In the interest of disseminating information about successful, innovative methods or materials for adult and nonformal education, the Center for International Education has included these publications in the Technical Notes series.

Both notes focus on simulation board games developed as part of the Maternal-Child Health Program of the Ciudad Vieja Health Center. They present a summary of experience which may be of value to others struggling with similar problems in different settings. The notes represent work in progress and are not intended in any way to be evaluations, although care is taken to present whatever evaluation information is available on the effectiveness of the methods discussed. They are intended to be self-contained so that practitioners can immediately adapt them for use in their own settings.

We encourage readers to share their reactions and particularly relevant, similar experiences which they may have had in other settings. Technical Notes are available from:

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Julie Burns
Frank Bialosiewicz
Amherst, Massachusetts
July 15, 1983

ROAD-TO-BIRTH GAME

Introduction

The Road-to-Birth Game is a board game which simulates the prenatal period of women in Third World regions. Its general purpose is to help pregnant women acquire the attitudes and skills which will provide them with a means for maintaining their health and that of their unborn children. The game is designed to encourage women to discuss and critically analyze factors affecting their health. It stresses the importance of regular prenatal care by helping women to recognize and cope with common problems and danger signals during pregnancy and to take appropriate action.

Background

Third World women are subject to a low standard of living, malnutrition, anemia, poor hygiene, chronic disease, excessive work load, and illiteracy. In addition, many Third World women are either pregnant or breast-feeding during a significant portion of their reproductive lives. In many areas, women have an average of 7-8 live births, as well as 4-5 uncompleted pregnancies. For these women, pregnancy and childbirth can be hazardous events; Third World women can be 100 times more likely to die in childbirth than women in industrialized countries.

Among the most important causes of these deaths are excessive bleeding (often caused by low iron levels in the blood) and infections associated with pregnancy. High fertility and malnutrition also make women susceptible to complications which are potentially fatal to both mother and baby. Pregnant women in Third World countries are also subject to diseases and infections such as malaria and intestinal parasites which further aggravate their condition.

The problems faced by women surviving pregnancy and childbirth are enormous. Continuous pregnancy and breast-feeding place undue burden on a woman's nutritional state. Not only must her food supply meet all her own needs, she must also provide all the nutrients for

the baby to grow during pregnancy and breast-feeding. During these periods, a woman's nutritional requirements for calories, protein, vitamins, and minerals increase considerably. A malnourished woman will meet her unborn or lactating child's nutritional needs at the expense of her own meager reserves. Even when sufficient food is available to meet the woman's needs, family food allocation patterns and cultural food taboos during pregnancy and breast-feeding often limit the amount and types of food consumed by the woman.

Women's nutritional status is also affected by the amount of energy they must expend. While rest during the last three months of pregnancy is important to ensure the necessary weight gain of the unborn child, Third World women often continue to work as usual right up until labor. Furthermore, they resume work responsibilities soon after birth. Not only are women responsible for all food preparation and child care, they must also often walk long distances to collect firewood and water, often with the youngest child strapped to their backs. Frequently they perform agricultural and other wage labor in addition to their other duties.

The stress of continuous pregnancy and breast-feeding, coupled with the work load women assume, often leads to chronic undernourishment, anemia, fatigue, and premature aging. The children of these mothers are also at risk. Malnourished mothers tend to give birth tc low birth weight babies. These babies are more likely to die during infancy than babies born with normal weights. Infant mortality rates are 30-40 times higher in the Third World than in the developed world, as high as 200 per 1,000 live births in some areas. Low birth weight babies are also likely to suffer from conditions related to their deprived nutritional status, including mental retardation and decreased immunity to infectious diseases. For the malnourished child, a simple bout with diarrhea or measles can be fatal.

The problems of Third World women and their babies are aggravated by lack of access to good quality medical care which in many areas of the developing world is either non-existent or inaccessible because of geographic, economic, or other constraints. Maternal and child ill health and mortality are a consequence of economic, social

political, and religious factors as well as local, national, and international inequities. Obviously any long range solutions to these problems must be aimed at changing these underlying inequities.

Within the framework of existing conditions, however, some educational programs for women have been successful in reducing infant and child mortality and improving maternal and family nutrition. Unfortunately, much of the burden for providing these educational activities rests with rural medical and paramedical personnel, who are often overwhelmed with treating diseases and conditions and who receive little or no support, training, or tools with which to carry out educational activities.

Setting

Such was the case at Ciudad Vieja Health Center, a small, rural health post in the highlands of Guatemala. This health post is staffed by two auxiliary nurses and a rural health technician all with 2-3 years of specialized training in health care. In addition, medical students from the national university spend six-month internships at the health post, providing out-patient services and referrals one or two days a week.

In addition to providing health care, the staff of Ciudad Vieja Health Center promote programs of the Ministry of Public Health, particularly educational activities for mothers groups and in-service training for traditional birth attendants (TBA) and village-level health promotors. Little is provided in terms of resources or training necessary to carry out these responsibilities. The Women-to-Women Project staff, in line with their goal of developing educational methods and materials for mother/child health progrms in Third World settings, provided support to the local health workers in performing their educational role more creatively and effectively.

Project and health center staff worked primarily with a mothers group and a TBA group from the district. Participants of the mothers group who were receiving food subsidies were required to take part in educational programs at the health center. These programs consisted mainly of lectures by the nurses on topics such as nutrition, hygiene, and vaccinations. Not surprisingly, motivation was low and attendance

was poor. Many of the mothers were pregnant, and their neglecting to receive regular prenatal checkups was a concern of the health center staff. TBA's were strongly urged to attend the in-service training sessions, but they, too, showed little interest in the programs. Generally too much time was spent telling them what they did wrong or what they should not do. There were few opportunities for active participation, discussion, or interaction.

Given these difficulties, Project staff sought to create an environment conducive to learning. An informal needs assessment was carried out with each group. Frank discussions enabled the health center staff to identify many of the participants' problems. This resulted in better understanding of the constraints to which each side was subjected. Subsequent learning activities were based on the needs and interests of the two learning groups. The Road-to-Birth Game was designed as a method of helping the health center staff to meet their program objectives with regard to pregnancy and prenatal care. At the same time, it would facilitate development of critical understanding of the issues and problems related to pregnancy and maternal health by encouraging learners and educators to engage in dialogue, discussion, and analysis.

Game Description

The original version of the Road-to-Birth Game was developed and pretested with a group of TBA's from Ciudad Vieja district and was subsequently played with the mothers group. Both groups enjoyed playing the game, and it stimulated discussion and analysis of problems. The game was also tested with a group of low-income urban women in Honduras. The original game emphasized the need for prenatal checkups with medical staff at the health center. The present version, however, encourages discussion of pregnancy and problems that arise during pregnancy among women in the community as well as with health care providers.

The Road-to-Birth Game enables players to actively participate in the learning process. They learn from each other by sharing their ideas, opinions, and experiences in a supportive environment. Role playing helps players to internalize and personalize knowledge and skills.

Educational Objectives

The Road-to-Birth Game enables participants to:

1. Identify the signs and symptoms of pregnancy.
2. Discuss aspects of prenatal care and common issues of pregnancy:
   a. seeking care from a TBA or health professional
   b. monitoring weight gain
   c. nutrition
   d. monitoring blood pressure
   e. hygiene
   f. medications during pregnancy
   g. tetanus immunization
   h. determining position of unborn baby
   i. monitoring heart rate of unborn baby
   j. work load of expectant mothers
   k. breast-feeding
   l. preparation for labor
3. Recognize common proglems that can arise during pregnancy, and describe desirable preventive or curative measures to deal with these problems:
   a. contact with measles (rubella) in first three months of pregnancy
   b. use of alcohol and tobacco
   c. use of medications
   d. anemia
   e. threat of miscarriage
   f. nausea or vomiting
   g. heartburn
   h. leg cramps
   i. varicose veins
   j. constipation
   k. hemorrhoids
   l. backacke
   m. swelling
4. Identify danger signals during pregnancy which require immediate medical attention:
   a. excessive vomiting
   b. bleeding or leaking of fluid from vagina
   c. difficulty with urination
   d. fever or chills
   e. sharp abdominal pain
   f. very large varicose veins
   g. excessive and sudden swelling of hands, face, legs, or feet
   h. blurred vision
   i. convulsions
5. Describe an appropriate diet for pregnant and breast-feeding women which utilizes local food resources.

Game Components*

- 1 game board
- 1 discussion guide
- 1 pack of LUCK cards
- 6 different markers
- 1 die or spinner
- 1 bag of approximately 100 beans, corn kernels, or other non-rolling, small objects
- 1 content outline

The game board is organized in the form of a winding road. It begins with conception and ends with three different birth experiences. The 40 squares on the road roughly correspond to the 40 weeks of pregnancy. Spaces on the game board are:

- START space with the message, "Congratulations, you are pregnant!"
- Illustrated DISCUSSION spaces
- LUCK spaces identified by a question mark
- DANGER SIGNAL spaces
- DEVELOPMENTAL LANDMARKS indicating number of weeks completed
- Three-forked road leading to three different BIRTH OUTCOMES

The illustrated DISCUSSION squares serve as a stimulus for problem analysis and discussion during the game. When a player falls on one of these spaces, the educator directs questions to the player which help her reflect critically on the illustrated theme. Analysis should include reference to local beliefs and practices as well as local remedies. Through this discussion, players share their ideas, opinions, and experiences with the rest of the group.

A discussion guide is provided in the Appendix to help the educator facilitate discussion when players land on DISCUSSION squares. The educator should change, add, or delete questions as necessary in order to make the discussion relevant to the particular circumstances of the learning group. Since more than one player is likely to land on one particular square, the educator need not discuss all

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*See Appendix for packet of game components.

aspects of each issue with any one player. Some questions can be reserved for subsequent players. The group can spend as much or as little time on a particular topic as necessary, depending on the group's needs and interests and the amount of time available.

LUCK cards correspond to LUCK spaces on the game board. They contain questions about aspects of pregnancy, including self care, diet, emotional issues, prenatal care, and common problems. The cards also contain instructions for simple role-play situations dealing with these topics. The cards are organized so that the questions which come up correspond to the area of the game board the players are moving through at a particular time. For example, questions dealing with nausea and diet come up toward the beginning of the game when the DISCUSSION spaces on the game board illustrate these topics. The combination of LUCK cards, DISCUSSION spaces, and DANGER SIGNAL spaces insure that all topics get adequate discussion and review.

LUCK questions appearing in the Appendix may be placed on small cards. On the opposite side of each card, a question mark can be written. The sequence may be altered, or cards may be added or dropped depending on the needs, interests, and abilities of each learning group. Examples of LUCK questions are:

- Your neighbor is pregnant. Talk with her about foods she should eat to ensure a strong and healthy baby.
- How can you tell if a pregnant woman is anemic?
- Show the correct way to lift heavy objects from the floor when pregnant.
- What can a pregnant woman do to relieve swelling of the feet?

LUCK cards should be numbered on the side with the question mark so that they may be easily ordered before play.

The six markers identify the players during the course of the game. A number of items are suitable such as coins of different denominations, buttons of different sizes and colors, pieces of thick colored paper or plastic, or bottle caps. The important point is that they be easily distinguishable. The die or spinner is the mechanism by which players are able to move their markers around the game board. Other methods of randomly selecting numbers from 1-6 may be used instead to indicate number of moves per turn for each player.

The beans, corn kernels, or other suitable non-rolling, small objects represent each player's "resources." During the game, players have opportunities to gain or lose these units.

A content outline for the educator is provided in the game packet. It summarizes the knowledge and skills important to maternal/child health. The educator might want to organize some of this material into other formats. Demonstrations might be used to present certain points, such as exercises to minimize backaches or methods of lifting and carrying heavy items during pregnancy. Visual aids can be used to clarify and explain other topics including the anatomy of pregnancy and positions of the unborn child. A variety of methods and materials help participants acquire the knowledge and skills necessary to play the game successfully and ultimately, to ensure the good health of the pregnant woman and the unborn child.

The educator should adapt the content of the game to local circumstances. Beliefs and practices will vary with regard to pregnancy, childbearing, nutrition, and health. The kinds of problems which may arise during the prenatal period may also vary, so too the preventive and curative services provided by midwives, traditional healers, or modern medical personnel. The educator should not hesitate to change any aspect of the game which is felt to be inappropriate. Question cards can be replaced with others, and illustrations on the game board can also be covered with others that are suited to the local situation. Depending on the level of knowledge and experience of the players, the educator can vary the level of simplicity or complexity of the game as well. The rules for playing the Road-to-Birth Game may also be adapted as needed.

Guidelines for Playing

1. Place the game board on a table around which six players can sit comfortably. Invite other participants to sit or stand behind the players and observe.
2. Place properly ordered LUCK cards on the designated space on the game board. Invite someone from the observer group to read aloud the LUCK questions when necessary. This helps players who are illiterate or who have difficulty reading.

3. Give each player ten units of beans, corn kernels, or whatever else is used. Explain that these represent their "resources" or "money"and that during the game they will have opportunities to lose them or earn more. The more they have at the end of the game, the better. Invite another observer to serve as "banker." She is responsible for handing out and collecting units during the game.

4. Have each player select a marker and place it near START but not on the first square.

5. Briefly explain the game to the players. Point out that the game board is a road that begins with conception and ends with three different birth experiences. Explain that players will throw the die and move their markers the number of spaces indicated. Demonstrate this if necessary. Provide further information about the different spaces as players land on them.

6. To begin, ask each player to identify one sign or symptom of pregnancy. Stress one so that all players have an opportunity to contribute. As each player does so, she moves her marker to the first space and is congratulated now that she is pregnant and about to embark on the road to birth.

7. Any player can begin, followed sequentially by those to her right or to her left. Stick to the same sequence throughout the game and in subsequent playings to avoid confusion. Have each player throw the die and move her marker the corresponding number of spaces.

8. When a player lands on a LUCK space, have her, or the person to whom the task was assigned, select the top LUCK card and read the question or role play instructions aloud. Intervene to clarify or rephrase it if necessary. Have the player answer the question or do the role play as best as she can. When she has finished, ask the group for their opinions as to whether she correctly responded or if there is more to be said on the matter. If the group feels she has performed adequately, she is given two beans. If she has not, give the next player a chance to respond. Beans are shared or given to the player who more adequately responds, according to the group's judgment.

9. When a player lands on an illustrated DISCUSSION space, ask her questions about the particular issue using the dicussion guide. The following is an example of such a discussion:

   Mrs. Moreno has landed on the DISCUSSION square which shows a tired-looking woman leaning on a broom.

Educator:	What do you think is the matter with this woman?
Mrs. Moreno:	Well, she's tired of doing housework.
Educator:	Yes, she certainly does look tired, doesn't she? Why do you think she's so tired?
Mrs. Moreno:	She's pregnant.
Educator:	Are women always this tired when they are pregnant?

Mrs. Moreno: Not if they're healthy. This woman is too skinny. Look at her arms! They look like sticks.

Mrs. Suarez: My cousin looked like that last time she was pregnant. The midwife said her blood was too thin.

Educator: Yes, that's what we call anemia. A woman loses blood during her menstrual cycles. If she doesn't eat foods which contain iron, she is not able to replace the lost blood. Anemia is also common during pregnancy because the baby needs lots of iron to produce blood. Pregnant women must be sure to get enough iron in the diet. How else can we tell if a woman is anemic?

Mrs. Moreno: Well, the woman looks pale. And even her gums and fingernails look white.

Mrs. Santos: Also, when you're anemic, you feel like eating dirt.

Encourage everyone's participation by directing questions to other members of the group, such as:

What do you think, Mrs. Gomez?
Has this been the case in your experience, Mrs. Suarez?
Mrs. Santos, do you think this problem is common around here?
Mrs. Avila, what would you do in this case?

10. When a player lands on a DEVELOPMENTAL LANDMARK, have her or the person reading the LUCK cards read the message. Provide additional explanation as necessary. The player receives one resource unit as a bonus.

11. When a player lands on a DANGER SIGNAL space, she loses one resource unit. Remind her that this symptom requires immediate medical attention. Have the group discuss the danger signal in question, suggesting reasons for the condition.

12. As players reach the last square on the game board, ask them to remain there until all players have arrived. Then ask the players to count up their resource units. Depending on the number they have, they will take one of three possible routes or birth alternatives:

    a. The two players with the most resource units have a home birth with a midwife attending. Both mother and baby are healthy and safe because the mothers took good care of themselves during pregnancy and received good prenatal care. Stress that this is the most desirable route.

    b. The two players with the next greatest amount of resource units have birth with complications such as high blood pressure of the mother or abnormal position of the child. Because they received good prenatal care, however, their

problems were diagnosed early and necessary precautions were taken. In this case, the birth takes place in the hospital. Both mother and baby are safe.

c. The two players with the least number of resource units also have births with complications. Because they did not seek adequate prenatal care, however, no precautions were taken. The baby dies.

13. After the game, evaluate the experience by having players describe what they learned. Some examples of questions to start the discussion include:

Do you think this game presented a realistic picture of life in this area?
Do women here have the kinds of problems during pregnancy we faced in the game?
Which problems are most common?
Can these problems be dealt with in the manner described in this game?
Did you like the game? What did you like most? What did you like least?
Was there any aspect of the game that was confusing?
Is there anything about the game you think should be changed?
What important things did you learn during the game?

The Guatemalan Experience

Playing the Road-to-Birth Game was a valuable learning experience for both the traditional birth attendants and the nursing staff of the Ciudad Vieja Health Center. For the TBA's, the game afforded an opportunity to review the signs and symptoms of pregnancy and common problems of pregnancy and ways of dealing with them. They also learned to share experiences with each other. On many occasions the game prompted the TBA's to relate particular case histories of pregnancies and births. This relating of personal experiences led to lively discussions which allowed the nurses to reinforce positive practices and to facilitate critical discussion of harmful practices. Playing the game also helped the nurses to gain insight into the TBA's perceptions of prengancy and childbirth and their manner in dealing with pregnant women. This in turn facilitated development of a smoother relationship between the TBA's and nurses.

When the game was played with groups of pregnant women, it facilitated lively discussions and provided entertainment as well as learning.

The women enjoyed the mechanics of playing, moving their markers around the board and answering questions and earning points. During the game the women also asked questions and expressed their opinions in a relaxed, supportive atmosphere in contrast to the brief time allotted to them at prenatal visits. They particularly appreciated learning about things they themselves could do at home to relieve minor complaints of pregnancy. Often the women shared their own home remedies. Prenatal attendance at the clinic, often with the TBA accompanying, improved following playing of the game.

Effective Use of the Game

The Road-to-Birth Game is a tool for the educator to organize and present content in a way that can be best internalized by learners. In addition, it provides a process that allows learners to draw upon themselves for solutions to their own problems. Usually, if the game is to be effective, educators must remove themselves from the center of attention so that the group can interact spontaneously. In contrast to the traditional teacher who supplies correct answers to learners, the educator "facilitates" learning by guiding discussion and dialogue through questions. With these questions, the educator encourages the group to identify and solve their own problems. In addition, the educator is a resource person equipped with knowledge that can be helpful in solving some of the problems. She makes this information available to the participants in a non-threatening, non-authoritarian manner.

Role playing allows learners to effectively participate in the discussion. For this reason, hypothetical situations which simulate reality are interspersed throughout the game. Guatemalan women needed no special training to role play. After a few short tries, most participants were adept at "acting out" what was requested. Educators should be aware of local traditions of play acting and incorporate them into the game if possible.

The game as it appears in this note may not adequately meet the needs of every learning group. Indeed, local conditions may change the content and form that make up this game. Educators should adapt

this game to reflect local conditions and to meet local needs. Illustrations which appear on the game board depict scenes from Latin America. They may not be easily recognizable or appropriate for groups in Asia or Africa. Local artists should be contracted to make appropriate drawings for the game board. As indicated throughout this note, LUCK questions, discussion guide, and content outline should be modified to reflect local practices. For example, if one lives in an area where women do not drink alcohol or smoke tobacco for cultural reasons, there is no need to spend undue time discussing the dangers of these habits to the unborn child.

Game Construction

The game components can be constructed from simple materials at little cost. If the illustrations on the game board are appropriate and the language used in training is English, the game board shown in the appendix may be used for play. Many facilitators will find, however, that a larger board with DEVELOPMENTAL LANDMARK and DANGER SIGNAL spaces written in other languages to be more appropriate. In this case the large illustrations included in the appendix can be cut out and pasted on a large piece of poster board in the order shown on the sample game board. Intermittent spaces can be drawn in accordingly and the messages can be written in the language desired. To aid illiterate and semi-literate players, spaces may be color coded. DANGER SIGNAL spaces, for example, can be outlined in red, while DEVELOPMENTAL LANDMARKS squares can be bordered in blue. The game board can be covered with transparent contact paper or brushed with clear varnish or shellac to protect it from weathering. LUCK cards can be made with small index cards or pieces of construction paper. Ideally the game components should reflect the culture and educational needs of the participants.

Conclusion

The Road-to-Birth Game as it appears in this note is by no means a finished product to be plugged in to any women's group in any Third World region. Rather, it is an evolving tool that has enabled at least a few educators in Guatemala to effect dialogue and discussion

among rural pregnant women and traditional birth attendants. No game in itself can be successful without a facilitator who knows how to use it. The facilitator must be both knowledgeable and trusting of the participants. She must be aware of her own biases and hesitate to "direct" participants toward her way of thinking. The effective facilitator provides the means for participants to identify and solve their own problems by using themselves and each other as their primary resources.

APPENDIX:

Game Components

CONGRATULATIONS

YOU ARE PREGNANT !

DANGER

HIGH FEVER OR CHILLS

?

DANGER !

PAINFUL URINATION

?

4 WEEKS

PLACENTA BEGINS DEVELOPING

DANGER !

PERSISTENT VOMITING

START

10 WEEKS

HEART STARTS BEATING

?

DANGER !

ABDOMINAL PAIN

?

18 WEEKS

MOTHER FEELS FETUS MOVE

?

29 WEEKS

BABY GETS HICCUPS

DANGER !

SUDDEN SWELLING

?

DANGER !

VISION PROBLEMS

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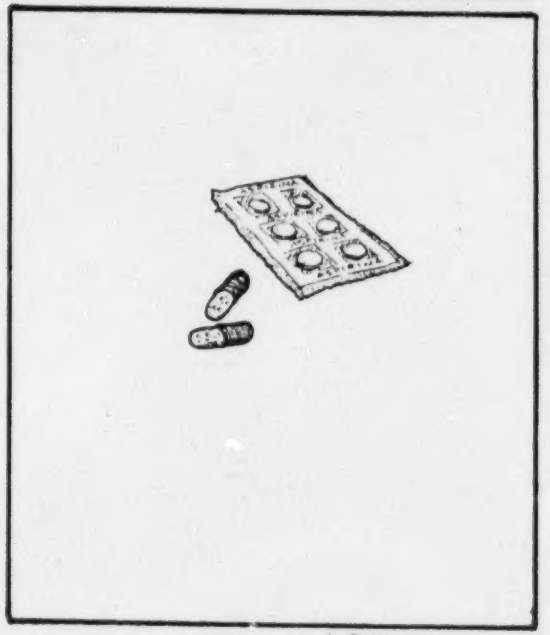
ROAD-TO-BIRTH GAME



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LUCK Cards

These are some of the questions and issues which appeared on LUCK cards for the Guatemala project. Educators should use whichever questions are appropriate or make their own relevant questions and transfer each one to a small index card. Cards should be numbered and ordered sequentially.

1. Why is it important for pregnant women to check their weight regularly?
2. What can a pregnant woman do so she won't feel nauseous when she gets up in the morning?
3. What local remedies do you know of for relieving nausea?
4. Your neighbor is pregnant but says she doesn't have much appetite. What advice can you give her?
5. What foods should a pregnant woman eat so her baby will grow well?
6. Why is it important for a pregnant woman to eat plenty of good food every day?
7. Your sister, who is two months pregnant, wants to visit her sister-in-law, whose son has rubella. Tell her what you think about this?
8. How would a pregnant woman know she is in danger of miscarrying?
9. What should a pregnant woman do if miscarriage is threatening?
10. If a pregnant woman can't afford to buy meat, what foods can she eat which will provide enough protein?
11. Which iron-rich greens grow wild or can be bought very cheaply?
12. Why is it important to eat foods rich in iron during pregnancy?
13. Your neighbor is pregnant and complains of acid stomach. Suggest how she might relieve this problem.
14. What local remedies do you know for acid stomach or heartburn?
15. What can a pregnant woman do to avoid getting varicose veins?
16. Your sister is pregnant. Show her the correct way to lift heavy things from the floor.
17. Why is it important for a pregnant woman to know what position her baby is in?
18. Why is high blood pressure dangerous during pregnancy?
19. How can you tell if a woman is anemic?
20. Your neighbor is pregnant and is anemic. Talk to her about which foods she can eat to strengthen her blood.

21. What can a pregnant woman do to prevent or relieve swelling of the feet?

22. You are pregnant and have painful leg cramps at night. Ask your friend what you can do about this.

23. Your sister-in-law is pregnant and is very depressed. Talk with her about why she is feeling this way.

24. At lunchtime there is only a small piece of cheese to eat with the tortillas and beans. José, Maria's husband, thinks he should eat it because he is the man and has to work hard in the fields. Maria, who is pregnant, thinks she should eat it because she needs the protein for her baby to grow healthy and strong. Who do you think will eat the cheese? Why?

25. You are pregnant and planning to breast-feed your baby. Your neighbor is breast-feeding her baby, who is strong and healthy. Ask her what you can do to have lots of milk.

26. Why is it important to eat lots of fruits and vegetables during pregnancy?

In addition to these questions, questions in the following discussion guide can also be used. Repetition of similar questions will provide players the opportunity to remember important information.

Discussion Guide

The following topics refer to the illustrated DISCUSSION spaces on the game board.

Pregnant woman talking with nurse or midwife:
-Why is it important to seek prenatal care early in pregnancy?
-What are the pregnant woman and the nurse or midwife talking about? Suggestions for possible topics of discussion between the woman and the nurse or midwife which the educator might want to explore include:
  -figuring out dates of conception, last menstrual period, and due date
  -emotional concerns, feelings of anxiety, feelings about being pregnant
  -concerns about labor and birth
  -husband's reaction to pregnancy
  -concerns about other children
  -financial concerns
  -concerns about delaying or avoiding subsequent pregnancies

Checking weight gain:
-Why is important to check weight regularly?
-How can a pregnant woman be sure she is gaining weight regularly?
-Why is it important to gain weight during pregnancy?
-What could a sudden, large weight gain be a sign of?

Nutrition:
-Why is it important for a pregnant woman to eat plenty of good food?
-Which foods should a pregnant woman eat for her baby to grow well and for her to feel strong and healthy?
-Are there any foods a pregnant woman should not eat? Why?
-Which foods should a pregnant woman eat so her baby will have healthy blood?
-What are the best foods a pregnant woman can buy for the least amount of money?
-How much salt should a pregnant woman use on her food?
-How much liquid should a pregnant woman drink?

Blood pressure:
-What is the nurse or midwife doing in this picture?
-Why should a pregnant woman have her blood pressure checked regularly?
-Why is it dangerous to have high blood pressure during pregnancy?
-What can a pregnant woman do to reduce the likelihood of getting high blood pressure during pregnancy?

Hygiene:
-Why is it important to maintain good hygiene during pregnancy?
-How often should a pregnant woman bathe?
-Why is it important to wash hands with soap before preparing meals or eating?
If water is scarce or difficult to obtain, the educator might want to discuss this situation and possible solutions to it.
See content outline for other related topics.

Medications:
-Do you think pregnant women should take medications? Why?
-Why can it be dangerous for pregnant women to take medications?
-If a pregnant woman takes medicines, what is the effect on the baby?
The educator may want to discuss the function of the placenta and the transfer of nutrients and other substances from the mother to the baby via the placenta and the umbilical cord.
-Do women in this area commonly take medications during pregnancy? Which medications? For what purposes?
-Are there any alternative methods of dealing with these problems during pregnancy?
The educator might also want to discuss use of herbs if appropriate.

Alcohol/tobacco:
-Do pregnant women around here smoke cigarettes?
-Do you think pregnant women should smoke cigarettes? Why?
-What happens to the baby when the mother smokes a cigarette?
-What are some of the risks to the mother and the baby of smoking during pregnancy?
-Do pregnant women around here drink alcoholic beverages?
-Do you think pregnant women should drink alcoholic beverages? Why?
-What happens to the baby when the mother has an alcoholic beverage?
-What are some of the risks to the mother and baby of drinking alcoholic beverages during pregnancy?
-If a pregnant woman feels tense or anxious, what are some things she can do to relax?
At some point during the discussion, the educator might also mention other relevant substances which are dangerous to pregnant women such as insecticides or pesticides for women involved in agricultural work.

Tetanus shot:
-This woman is getting a tetanus shot. For what reason?
-At what point in her pregnancy should a woman receive a tetanus shot?
-What is tetanus?
-What are the symptoms of tetanus in a newborn?
-How does a newborn get tetanus?
-How can tetanus in a newborn be prevented?

Anemia:
-What do you think is the matter with this woman?
-Why does she look so tired, thin, depressed, and pale?
-What is anemia?
-Why is it common for pregnant women to become anemic?
-What can a woman do to avoid becoming anemic?
-What are the dangers of anemia to the pregnant woman and her baby?
-What foods should a pregnant woman eat to avoid becoming anemic?
-Why is it important to take iron supplements during pregnancy?

Position of the unborn baby (fetal position):
-What is the nurse or midwife doing in this drawing?
-What can she tell by doing this?
-Why is it important to know what position the unborn baby is in?
-What is the normal position for the unborn baby to lie in?

Heart rate of unborn child (fetal heart rate):
-What is the nurse or midwife doing in this drawing?
-What can she tell about the baby by doing this?
-Why is it important to listen to the baby's heart?
-What is the normal range of a baby's heart rate while it is in the uterus?

Work load:
-What is this woman doing?
-How do you think she feels?
-Do women in this area have to work like this while they are pregnant?
-Why is it a problem for women to work so much when they are pregnant?
-Why does a pregnant woman need to rest, especially during the last three months of pregnancy?
-What solutions do you see to this problem?

Breast-feeding:
-What do you think these women are talking about?
-What concerns might the pregnant woman have about breast-feeding?
-What advice could the woman breast-feeding give to her pregnant friend about breast-feeding?
-Does the baby look healthy?
-Why do you think this baby is healthy?
-What can a pregnant woman do so she can produce good milk for her baby?
-What kinds of problems do women around here have with breast-feeding?
-What are some possible solutions to these problems?
-What can a pregnant woman do to prepare her nipples for breast-feeding?
-What is the substance present in the pregnant woman's breasts before the baby is born and before the milk comes in?
-Do women here feed their babies this substance? Why or why not?
-What is colostrum? Why is it good for babies?

Preparation for labor and birth:
This woman's baby is due any day.
-What is she doing? Why?
-Why is it important for everything to be clean when the baby is due to be born?
-What does a woman need to have ready for the birth of her baby?
-What else can a pregnant woman do to get ready for the birth of her baby?

Full-term pregnant woman:
This baby is full grown and ready to be born.
-What are some signs that labor is appproaching?
-How can a pregnant woman tell she is in labor?
-What are some differences between "false labor" and true labor?
-What are some things a pregnant woman can do when she goes into labor?
At this point, the educator can decide whether or not and in how much detail to focus on labor and birth. This may depend on the learning objectives of the game, the group's needs and interests, how slowly or quickly the game has been moving, and how much time is available. The game is intended to be played several times with the same group. There probably will not be enough time during each playing session to explore all the issues in depth. Topics which are not discussed sufficiently during one playing can be covered in subsequent playings of the game.

Content Outline

The educator should be familiar with the following topics before playing the game:

1. Signs and Symptoms of Pregnancy:
   a. absence of menstrual period
   b. nausea or "morning sickness"
   c. lack of appetite
   d. dizziness
   e. fatigue, sleepiness
   f. frequent urination
   g. breast tenderness
   h. breast enlargement
   i. darkening of nipples
   j. increase in size of abdomen
   k. "mask of pregnancy" (increased pigmentation)
   l. fetal movement

2. Aspects of Prenatal Care and Common Issues of Pregnancy.

   a. Seeking prenatal care with a midwife or health professional.
   Prenatal care, provided to the mother from the time she realizes she is pregnant until the delivery of the baby, is important in order to avoid or minimize problems which could endanger the life and health of both the pregnant woman and her unborn child. A pregnant woman's relationship with a midwife or nurse can also be very valuable in terms of helping her to feel confident in herself and her body and her ability to give birth. During the prenatal period, a woman should have the opportunity to learn about her body, labor and birth, nutrition, hygiene, self-care, and whatever else will help her to maintain good health for her and her unborn child.

   b. Monitoring weight gain
   A woman's weight should be checked periodically during pregnancy to make sure she is gaining weight adequately. If the pregnant woman does not gain weight regularly, this means the baby is not growing well and is not receiving the food he or she needs to grow and develop normally. A woman who does not gain enough weight during pregnancy will give birth to a malnourished, low birth weight child. Low birth weight babies face a greater risk of dying during infancy; those who survive infancy are at a disadvantage. They are more susceptible to diseases and have growth and development retardation as well as the likelihood of mental retardation. A weight gain of 8-10 kg during the nine months of pregnancy is recommended to account for the baby and tissues to support the baby. Weight gain is also checked regularly for a large, sudden increase that may be a sign of a serious disorder.

   c. Nutrition
   The role of nutrition in assuring the health of the pregnant woman and her child should be stressed throughout the pregnancy. Although the game can serve to teach the players many important aspects of nutrition during pregnancy, additional teaching methods such as cooking demonstrations, meal planning and money allocation exercises, and vegetable gardening might be helpful.

Since cultural beliefs and food taboos often play an important role in determining women's food intake during pregnancy, the game can serve as a useful vehicle for exploring and analyzing these beliefs and taboos, hopefully leading to a change for the better in food intake during pregnancy.

During pregnancy, a woman's requirements increase for energy and all nutrients, particularly protein, calcium, iron and other vitamins and minerals.

During pregnancy, a woman needs to eat larger quantities of food to provide her with the energy she needs to carry out her daily activities. Carbohydrates are good sources of energy. They include: maize (corn), cereals (wheat, rice, oats, millet, sorghum), noodles, potatoes, yams, squash, cassava and plantain. In addition, small amounts of fats such as cooking oil (vegetable oil is better than animal fat), salad oil, butter, and margarine should be eaten as well.

Protein during pregnancy is needed for the formation of the baby's body as well as the mother's uterus and placenta. A pregnant woman should eat at least 75 grams of protein a day. Foods high in protein are: meat, chicken, eggs, fish, seafood, milk, cheese, soybeans and insects. Foods with some protein are beans, peas, lentils, nuts, seeds, dark green leafy vegetables and cereals.

Calcium is needed to build the baby's bones and teeth. It can be found in milk, cheese, yogurt, soybeans, dark green leafy vegetables, nuts and sesame seeds.

Iron is essential for the increase in the pregnant woman's blood volume and to supply the baby's iron stores. The best sources of iron are liver, kidney, red meat, prune juice, dried beans, lentils, seeds and dark green leafy vegetables and blackstrap molasses. In addition to eating iron rich foods, pregnant women should take an iron supplement to prevent anemia. Iron is best absorbed when eaten with foods containing Vitamin C.

Vitamin C is very important in the development of a health baby. It can be found in citrus fruit (oranges, grapefruits, lemons, strawberries, and tangerines) and also in tomatoes, green peppers, other green vegetables, and canteloupe.

Many other important vitamins and minerals are also necessary to insure a healthy baby and mother; these can be found by eating a variety of foods such as whole grains, vegetables and fruits.

d. Monitoring blood pressure

During pregnancy a woman can have high blood pressure without being aware of it, because often she does not notice any symptoms. The only way to know with certainty a person's blood pressure is by having it measured with a blood pressure cuff. Often high blood pressure during pregnancy can be corrected by making sure the woman is eating enough protein and salting her food to taste. If high blood pressure during pregnancy is left untreated, it can cause convulsions in the mother which can be fatal for both her and her unborn baby.

e. Hygiene

Hygiene during pregnancy and at any time is important in preventing disease and in maintaining good health. A pregnant woman should bathe regularly. Bathing is especially important in hot climates and will help the woman to feel more comfortable. Hand washing with soap should be done after going to the toilet, tending animals, cleaning or changing soiled diapers and before preparing meals, eating or feeding children.

In areas where hookworm is common, pregnant women should not go barefoot. Hookworms enter the body through the soles of the feet and cause anemia.

Cleanliness around the home is also very important to prevent diarrhea and other diseases. This includes:

1. Keeping animals outside of the house and kitchen (especially pigs)
2. Keeping dogs off the bedding
3. Cleaning up after children and animals who have bowel movements in the house
4. Hanging out sheets and blankets in the sun often
5. Cleaning the house regularly

Cleanliness in eating and drinking can be established by

1. Boiling drinking water (unless potable) and storing it in covered containers off the ground
2. Keeping cooked food covered to protect it from flies
3. Washing fruit before eating it
4. Eating only well-cooked meat
5. Not eating food that is old or smells bad

f. Medications during pregnancy

No drug has been proven safe for the unborn child. Any medication taken by the mother will reach the baby via the placenta and umbilical cord and may harm the baby; therefore, pregnant women should avoid all medications except those administered under the close supervision of a doctor who knows of the pregnancy. Aspirin, for example, should not be taken during pregnancy since it interferes with blood clotting, predisposes both mother and baby to hemorrhage and inhibits the onset of labor. Teramycin, an antibiotic, must not be taken during pregnancy because it affects the formation of the baby's bones and teeth.

Pregnant women should avoid all medicines, including painkillers, tranquilizers, sleeping pills, antihistamines, antibiotics, laxatives, suppositories, medicated creams and ointments, antacids, diuretics, nasal sprays, etc. The only pills a pregnant woman should take are iron and vitamin pills.
(See Section 3 for herbal and other alternatives to medications for dealing with common problems of pregnancy).

g. Tetanus immunization

The midwife or person attending the birth should have short fingernails and should scrub her hands well with soap and water before cutting the umbilical cord. The scissors or instruments she uses for cutting the cord, and the string or cord clamps for clamping the cord, should be sterile. Otherwise, the newborn could become infected with tetanus

which usually becomes manifest 3-7 days after birth. The first symptoms of tetanus in a newborn are:
-the baby begins crying and does not stop
-the umbilical cord is infected, looks red or smells bad
-the baby cannot nurse
These symptoms are followed by a stiff jaw, stiff neck and finally convulsions. Tetanus is a dangerous disease which is usually fatal.

A woman who receives a tetanus immunization during her pregnancy will protect her baby from this disease. If the woman has never had a tetanus vaccination, it should be given at the 6th, 7th and 8th months of pregnancy. If she has been vaccinated against tetanus before, she should have a booster during the seventh month of pregnancy.

h. Determining fetal position
The mother's uterus should be palpated and measured at each prenatal visit to ensure that the baby is growing properly and to determine the position. If the baby's head is down, the birth is likely to be normal, and the mother can safely have her baby at home with her midwife. If the baby's head is up (breech), the birth may be more difficult. In this case for the mother to give birth in or near the hospital is advised. If the baby is lying sideways, the mother should have her baby in a hospital because both she and the baby could be in danger.

i. Monitoring fetal heart rate
The baby's heart can be heard with a fetal stethoscope beginning at 20 weeks. The normal number of heartbeats varies from 120 to 160 a minute. A heartbeat that is slower than 100 or faster than 160 could indicate that something is wrong with the baby.

j. Maternal work load
Rest during the last three months of pregnancy is the best way of ensuring that the woman's food intake will be sufficient for the baby to gain weight during this critical period of development. Many women, however, continue to carry a heavy burden of work including meal preparation, childcare, collection and transport of firewood and water, and often agricultural or other wage labor. This represents a serious energy drain on the pregnant woman at a time when her energy needs are particularly high. Where appropriate, education to men on this and other topics related to maternal health might play an important role in finding ways to reduce women's work load during pregnancy.

k. Breast-feeding
An adequate diet during pregnancy is the best way of ensuring an ample milk supply once the baby is born. During pregnancy, a woman can prepare her nipples for breast-feeding by gently rubbing them with a towel and by firmly pulling them out with her fingers several times. Exposing the nipples to fresh air and sunshine is also helpful. Before the mature milk comes in between the 2nd and 4th day after the birth of the baby, the woman's breasts secrete a thick, yellowish substance called colostrum. Colostrum plays a vital role in protecting the infant from disease; it contains disease antibodies which protect the infant through the first six months of life. The newborn baby should nurse as soon after delivery as possible. Nursing also helps the uterus to contract and prevents bleeding.

In order to produce enough milk to breast-feed her baby and to maintain her own good health and nutritional status, a nursing mother needs to drink plenty of liquids and to eat body-building foods such as milk, cheese, meat, eggs, fish, seafood, beans, nuts, and cereals.

Some reasons for breast-feeding:

1. Breast milk is the perfect food for babies. It contains exactly the right amount of protein, carbohydrates and fats that the baby needs to grow and develop.
2. Breast-fed babies are healthier, stronger and are less likely to get sick and die than babies who are bottle fed.
3. Breast milk is clean; it contains none of the harmful germs which are often found in dirty feeding bottles.
4. Breast milk is always the right temperature.
5. Breast milk has antibodies that protect the baby against diseases such as measles and polio.
6. Breast-feeding saves money.

1. Preparation for labor

Pregnant women should have the following things ready by the seventh month of pregnancy:

-Several cloths or rags which are washed, boiled, and ironed
-Soap, preferrably anticeptic soap
-A clean scrub brush for cleaning hands and fingernails
-Alcohol for rubbing hands after washing them
-Clean cotton
-A new, unwrapped razor blade for cutting the umbilical cord or clean, rust-free scissors which are boiled for 20 minutes before cutting the cord
-Sterile gauze or patches of thoroughly cleaned cloth for covering the naval
-Two clean ribbons, shoelaces or strips of cloth for tying the cord. Both patches and ribbons should be wrapped and sealed in paper packets and then baked in an oven or ironed

Signs that Labor is Approaching

-The baby moves lower in the womb. The woman can breathe more easily, but she may need to urinate more often because of pressure on the bladder.
-A small plug of mucus, sometimes tinted with blood, may be discharged from the vagina.
-Contractions begin.
-The bag of waters that holds the baby in the womb may break with a flood of liquid. Sometimes this might be just a trickle.

3. Common Problems During Pregnancy

a. Contact with rubella (German measles) in first 3 months of pregnancy
Women who get rubella in the first three months of pregnancy may give birth to a baby who is damaged or deformed. For this reason, pregnant women who have not yet had rubella - or are not sure - should keep far away from children who have this kind of measles.

b. Use of alcohol or tobacco
Women who drink alcohol during pregnancy are likely to give birth to children who are damaged or deformed. Women who smoke during pregnancy are likely to have complications during pregnancy and childbirth. Every time a pregnant woman smokes a cigarette, the baby's oxygen supply is diminished. Babies of women who smoke weigh less, are more irritable and less responsive, and are prone to respiratory problems.

c. Use of medications without prescription
(See Section 2 f)

d. Anemia
Constant tiredness is a sign of anemia. It is fairly common during pregnancy. A woman loses blood during her menstrual periods and after delivery. If she does not eat enough foods which contain iron, her body will not be able to replace the lost blood, and she will become anemic. Anemia is worsened by pregnancy, as the baby draws on the mother's remaining iron reserves in order to develop.

The signs and symptoms of anemia are:
-Pale, transparent skin
-Weakness and fatigue
-Pale eyelids and gums
-White nails
-Desire to eat dirt

If a pregnant woman is anemic, she needs to eat more foods rich in protein and iron such as beans, groundnuts, chicken, milk, cheese, eggs, meat, fish and dark green leafy vegetables. She should also take iron pills. Women who are severely anemic are more likely to hemorrhage during childbirth and should give birth in a hospital in case extra blood is needed.

e. Threat of miscarriage
If a woman bleeds or has cramps during pregnancy she is probably having a miscarriage (losing the baby). She should lie quietly and send for her midwife. Miscarriages are most frequent in the first three months of pregnancy and are usually nature's way of dealing with an imperfectly formed baby. If there is no heavy bleeding the woman should stay in bed until everything comes out and the bleeding stops. If there is heavy bleeding, or bleeding continues for many days, the woman should stay in bed for 2 or 3 days after the miscarriage and medical help should be obtained.

f. Nausea
This usually occurs during the second and third months of pregnancy. Most women feel nauseous after getting up in the morning, although others experience nausea any time during the day. The best way to avoid it is to eat something dry, such as toasted tortillas, bread or crackers before getting up. Eating several small meals a day instead of the usual three main meals, and avoiding foods which are greasy or spicy may prevent attacks of nausea.

g. Heartburn
This is a common problem during pregnancy especially in the last few months. It can be caused by either too much or not enough stomach acids, or by pressure on the stomach from the growing uterus, causing food to back up in the esophagus (the canal linking the mouth and stomach). It can be relieved by drinking milk or camomile or mint tea, and sleeping with the head slightly elevated. Eating small frequent meals, and avoiding foods which are too heavy, greasy or spicy may also help.

h. Leg cramps
These occur frequently in late pregnancy, and often at night. Although they can be quite painful, they are not serious. The best treatment is to flex, not point, the toes and to massage the muscles until it relaxes. Leg cramps seem to be more frequent among women who lack calcium, so to eat plenty of foods such as milk, cheese and tortillas is important.

i. Varicose veins
Varicose veins are common during pregnancy due to the weight of the baby pressing on the veins in the legs. A woman who develops them should rest her legs as much as she can. When lying down, she should rest her feet on a pillow so her legs will be elevated. If possible she should rest her feet this way for 10 minutes every few hours, whenever she is sitting or lying down. She can also wrap her legs with elastic bandages during the day.

j. Constipation
Constipation during pregnancy is caused by the slowing of digestion and the pressure of the baby. Drinking lots of water, and eating plenty of foods high in fiber such as cassava, bran, whole grains, raw fruits and vegetables can help. A glass of warm water with a little lemon juice upon arising is also helpful.

k. Hemmorrhoids
Hemorrhoids are varicose veins in the anus. They result from the weight of the baby in the womb. They can sometimes be pushed back in with a vaseline coated finger. Kneeling with the buttocks in the air often relieves the pain.

l. Backache
Many pregnant women complain of backache. A large part of this can be avoided by using the leg muscles instead of the back muscles when lifting anything heavy (including children) from the floor. Sitting and standing with the back straight is also helpful. Massaging and applying heat to the area also helps relieve the discomfort of backache.

m. Swelling of the feet
Toward the end of pregnancy, many women experience swelling of the feet. This gets worse if the woman spends a lot of time on her feet, and during hot weather. It can be alleviated by resting with the feet up several times a day, or by immersing the feet in cold water. Swelling is worse in women who are anemic or malnourished, so women with swelling should eat plenty of protein and salt her food to taste.

4. Danger Signals During Pregnancy:

The appearance of any of the danger signals during pregnancy requires immediate medical attention.

a. Excessive vomiting
Excessive vomiting leads to dehydration and undernourishment. Without enough fluids and nutrients the baby will not grow properly. In a woman who is malnourished, prolonged vomiting will endanger her nutritional status even more.

b. Bleeding or leeking of fluid from vagina
Bleeding during the early part of pregnancy is probably a sign that the woman is going to have a miscarriage. (See Section 3e) Bleeding after the sixth month of pregnancy may mean the placenta is blocking the birth opening (placenta previa) or separating from the uterus prematurely (abruptio placenta). This is a serious emergency as the woman could bleed to death. Medical help should be summoned immediately or the woman taken to a hospital. Leaking of fluid from the vagina before the pregnancy is at term could indicate that the bag of waters in which the baby is lying has ruptured prematurely. This creates an open channel into the uterus, and there is danger of infection. The mother should seek medical care and be very careful about toilet hygiene, i.e. wiping from front to back and not inserting anything into the vagina. She should also drink plenty of water to replenish the supply of amniotic fluid which is constantly being produced and lost.

c. Difficulty with urination
This could be a sign of a urinary tract infection. The woman should seek medical attention and drink plenty of fluids.

d. Fever or chills.
This could also indicate an infection. Seek medical attention.

e. Sharp abdominal pain
This could indicate that the placenta is separating prematurely from the abdominal wall and may not necessarily be accompanied by visible bleeding. This is a serious emergency. (See Section 4b.)

f. Very large or painful varicose veins
The danger of deep varicose veins, which are characterized by tingling in the area affected, cramp-like pain, and tenderness in the calf is that of a blood clot in the lungs (pulmonary embolism). This can be fatal.

g. Excessive and sudden swelling of hands, face, legs or feet or blurred vision are signs of toxemia of pregnancy. Women with these symptoms should seek medical attention, rest in bed and eat foods rich in protein. If left untreated, toxemia can lead to convulsions which can be fatal to both mother and baby.

REFERENCES

Werner, D. (1980). Where there is no doctor: A village health care handbook. Palo Alto, CA: The Hesperian Foundation.

_____. (1982). Helping health workers learn. Palo Alto, CA: The Hesperian Foundation.

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